

DEC 09 2016

Steve Sturgess
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

Dear Mr Sturgess:

Thank you for providing a copy of the Fantastic Caverns Information for Employees on TCE in Cave Air, authored by Tom Aley, dated September 1, that was provided to employees by Fantastic Caverns at a facility meeting on October 13, 2016 (TCE Fact Sheet). The U.S. Environmental Protection Agency considers it an important step that the employees of Fantastic Caverns have information about the measured levels of TCE at the caverns. However, the EPA believes there is information in the TCE Fact Sheet that may mislead employees about the risks of exposure to TCE in air. Specifically, the EPA action level is based on the most current scientific studies that were not available when the Occupational Safety and Health Administration established the Permissible Exposure Levels for TCE. As noted on OSHA's website (www.osha.gov/dsg/annotated-pels) many PELs "are outdated and inadequate for ensuring protection of worker health." The TCE Fact Sheet also incorrectly dismisses the need to study or address the TCE contamination to ensure the health of employees and guest tourists.

The TCE risk-based action level for a typical industrial/commercial scenario with an 8 hour workday is $6 \mu\text{g}/\text{m}^3$ (EPA, 2016). This level is based on the TCE chronic reference concentration of $2 \mu\text{g}/\text{m}^3$ and an assumption that a single exposure to TCE at any time during an approximate three-week period in early pregnancy could result in one or more types of cardiac malformations. Thus, the critical exposure period of concern used to evaluate the potential for heart defects and derive the TCE action level is one day. Chronic exposure to TCE may affect the central nervous system, kidneys, liver, immune system, and/or male reproductive system, and poses cancer risks. An exceedance of the TCE action level indicates a potential imminent threat to human health. The EPA applies this analysis to sites with environmental contamination, and the OSHA standard referred to in the employee fact sheet is not a risk-based level that the EPA would apply to this situation.

The employees of Fantastic Caverns should be made aware how the EPA calculates the risks from exposure to TCE, and how the EPA uses the most current scientific information to protect workers and others at sites with environmental contamination. The EPA is available to discuss with MDNR and MDHSS options for enhancing communication with employees at Fantastic Caverns to ensure they receive correct information regarding potential health risks from exposure to TCE.

If you have any questions, please call me at (913) 551-7882.

Sincerely,



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12/09/16

Mary P. Peterson, Director
Superfund Division

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SUPR Bernard-Drakey <i>[Signature]</i> 12/9/16	ENST Schumacher <i>[Signature]</i> 12/09/16	CNSL Stevens <i>[Signature]</i> 12/9/16	CNSL Hoefer <i>[Signature]</i> 12/9/16	SUPR Buchholz <i>[Signature]</i> 12/9/16	SUPR Jackson <i>[Signature]</i> 12/9/16	SUPR Peterson <i>[Signature]</i> 12/9/16
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